Restricted Circulation

This paper is not an official document; it is for information only and reference cannot be made to it in any printed publication without the permission of the author.

AGRICULTURAL MEMORANDUM NO 585

ENDEMIC NEPHROPATHY - YUGOSLAVIA AND BULGARIA

L P Smith

Yugoslavia In Brodska Posavine

Taking as Weather factor:- Excess August, September, October and November rainfall over 80 mm, 60 mm, 30 mm and 20 mm respectively in the previous year - (W)

as Illness factor:- Total illnesses in previous 3 years minus deaths in previous 2 years (to give number at maximum risk) - (I)

In period 1960-1969:

Partial correlation of deaths on Weather + 0.77
on Illness + 0.81

with formula

Deaths = 0.05 W + 0.23 I - 1.4

Year	Deaths	W	I	Estimated Deaths	Error
1960	9	132	24	11	+ 2
1961	15	200	26	15	0
1962	12	77	48	13	+ 1
1963	16	108	49	15	- 1
1964	17	115	55	17	0
1965	14	142	38	14	0
1966	12	176	37	16	+ 4
1967	10	87	30	10	0
1968	11	98	27	10	- 1
1969	19	193	38	17	- 2
Test Year					
1970	15	120	21	12	- 3

The weather of the second previous year ie 1958 on 1960 has no effect on the deaths.

Bulgaria

Using the mortality data for Vratza County and rainfall data for Vratza and Slatina.

Assuming thresholds as follows

August 75 mm, September 50 mm, October 20 mm and November 10 mm, and counting as excess rain all amounts above these levels

Then if R is excess rain in a given year
R_p is excess rain the previous year

and D = number of deaths from October in the given year till September 24 months later

$$D = 0.43R_p + 0.27R + 9.5$$

with a multiple correlation of 0.80.

The correlation of D on $(R+R_p)$ is 0.77.

A similar formula is found if the deaths are taken during the next two calendar years.

Years (of deaths)	Deaths	R	R_p	Estimated Deaths
1961 Oct - 1963 Sept	34	51	30	36
1962 - 1964	47	107	51	60
1963 - 1965	64	72	107	75
1964 - 1966	75	125	72	74
1965 - 1967	80	37	125	73
1966 - 1968	94	167	37	71
1967 - 1969	110	27	167	89
1968 - 1970	88	140	127	102
1969 - 1971	73	44	140	82

There is also a high correlation (0.88) between $R + R_p$ and the number of deaths two years later (the second of the pair considered above). This suggests that the first of the two years is mostly influenced by the morbidity figures (which are not available).

Any comments or suggestions on this paper should be referred to the author.

Meteorological Office
Bracknell

December 1973